



## An update on human papillomavirus vaccine uptake among 11–17 year old girls in the United States: National Health Interview Survey, 2010<sup>☆</sup>

Tabassum H. Laz, Mahbubur Rahman, Abbey B. Berenson\*

Center for Interdisciplinary Research in Women's Health, Department of Obstetrics & Gynecology, University of Texas Medical Branch, United States

### ARTICLE INFO

#### Article history:

Received 13 January 2012

Received in revised form 24 February 2012

Accepted 20 March 2012

Available online 3 April 2012

#### Keywords:

Human papillomavirus

HPV vaccine

Vaccine uptake

Vaccination

Adolescent

National Health Interview Survey

### ABSTRACT

**Purpose:** A 3-dose human papillomavirus (HPV) vaccine is recommended for adolescents to protect against HPV-related cervical and other cancers. The purpose of this study was to provide an update on HPV vaccine uptake among 11–17 year old girls residing in the US.

**Methods:** Data from the 2010 National Health Interview Survey (NHIS) were obtained to assess HPV vaccination status and its correlates. Multivariate logistic regression analyses were performed to examine HPV vaccine uptake of  $\geq 1$  dose and  $\geq 3$  doses among all girls, and completion of the 3-dose series among those who initiated (received  $\geq 1$  dose) the vaccine.

**Results:** Overall, 28.9% and 14.2% received  $\geq 1$  dose and  $\geq 3$  doses of vaccine: 14.5% and 3.0% among 11–12 year old girls, and 34.8% and 18.7% among 13–17 year olds, respectively. Hispanics had higher uptake of  $\geq 1$  dose (odds ratio (OR) 1.63, 95% confidence interval (CI) 1.22–2.17) than whites. Having received an influenza shot in the past year and parents' awareness of the vaccine were significantly associated with receiving  $\geq 1$  dose (OR 1.88, 95% CI 1.51–2.33 and OR 16.57, 95% CI 10.95–25.06) and  $\geq 3$  doses (OR 1.48, 95% CI 1.13–1.92 and OR 10.60, 95% CI 5.95–18.88). A separate multivariate model based on girls who initiated the vaccine did not identify any significant correlates of 3-dose series completion. Among parents of unvaccinated girls, 60% were not interested in vaccinating their daughters and mentioned three main reasons: "does not need vaccine" (25.5%), "worried about safety" (19.3%) and "does not know enough about vaccine" (16.6%). Of those who were interested, 53.7% would pay \$360–\$500 for the vaccination, while 41.7% preferred to receive it at a much lower cost or free.

**Conclusions:** Only 1 out of 3 girls (11–17 years) have received  $\geq 1$  dose of HPV vaccine and much less have completed all 3 doses. Strategies should be taken to improve this vaccine uptake among girls, especially those 11–12 year olds, and to educate parents about the importance of vaccination.

© 2012 Elsevier Ltd. All rights reserved.

### 1. Introduction

Human papillomavirus (HPV) 16 & 18 is responsible for 70% of cervical cancer, while most cases of genital warts are due to HPV 6 & 11 [1,2]. Furthermore, persistent HPV infection has been identified as the primary cause of anogenital cancer [3]. In 2006, The United States Food and Drug Administration (FDA) approved a quadrivalent HPV vaccine against types 6, 11, 16, and 18 [4] as a primary preventive strategy to reduce HPV infections and HPV-related cervical cancers. A bivalent HPV vaccine was also licensed in 2009, which provides protection against HPV types 16 and 18

[5]. The Advisory Committee on Immunization Practices (ACIP) has recommended routine vaccination of either quadrivalent or bivalent HPV vaccine in girls aged 11–12 years and "catch-up" vaccination for girls and women aged 13–26 years in a 3-dose series which is administered over 6 months [4,5]. These vaccines are highly effective in preventing HPV infections among HPV-naïve adolescent girls [4–7]. In 2011, ACIP extended their recommendations to include routine use of quadrivalent HPV vaccine for 11–12 year old males and "catch-up" vaccination for those 13–21 years old [8].

Studies based on small sample sizes [9–17] and national surveys [18–22] have reported HPV vaccine uptake among US adolescent girls based on data collected after the vaccine was first introduced. All studies have shown low HPV vaccine uptake with notable differences in a variety of settings. Based on 2008 National Health Interview Survey (NHIS)-child sample data, Wong et al. [21] observed low uptake of  $\geq 1$  dose and  $\geq 3$  doses of HPV vaccine among 11–17 year old girls (23% and 9%, respectively) while 41% of those who initiated the vaccine completed the 3-dose series. In this study, we aimed to update estimates of HPV vaccine uptake of  $\geq 1$  dose and

<sup>☆</sup> This study was presented at the 59th Annual Scientific Meeting of Society for Gynecologic Investigation, San Diego, California, USA, March 21–24, 2012.

\* Corresponding author at: Department of Obstetrics & Gynecology, Center for Interdisciplinary Research in Women's Health, University of Texas Medical Branch, 301 University Boulevard, Galveston, TX 77555-0587, United States. Tel.: +1 409 747 2417; fax: +1 409 747 5129.

E-mail address: [abberens@utmb.edu](mailto:abberens@utmb.edu) (A.B. Berenson).

$\geq 3$  doses among 11–17 year old girls, and completion of the 3-dose series among those who initiated the vaccine using 2010 NHIS-child sample data and to compare it with 2008 NHIS data [21]. In addition, we aimed to examine the correlates of uptake of  $\geq 1$  dose and  $\geq 3$  doses among all girls as well as the 3-dose series completion among those who initiated the vaccine.

## 2. Methods

### 2.1. Study population

National Health Interview Survey (NHIS) is a cross-sectional, annual, in-person household survey conducted throughout the year [from January to December] by the National Center for Health Statistics/Center for Disease Control and Prevention (NCHS/CDC). This survey includes a nationally representative sample of the US civilian, noninstitutionalized population selected through a complex, stratified, multistage probability sampling design. Hispanics, blacks and Asians were oversampled to ensure adequate representation and stable estimates for these racial and ethnic groups. Detailed methods of this survey have been published elsewhere [23]. The in-person interviews yielded demographic, socioeconomic and health status data for all members of each participating family. From each family, a child <18 years of age (the “sample child”) and an adult (the “sample adult”) were randomly selected for additional questions. In the 2010 NHIS-Sample Child Module, a total of 11,277 children <18 years of age were surveyed with an overall response rate of 70.7%. A parent (91% cases) or parent proxy (9% cases) answered questions on behalf of the “sample child”.

In the 2010 NHIS-Sample Child Module, the HPV vaccine related questions were administered to all families with adolescents who were age-eligible for HPV vaccination at the time of the survey [21]. We obtained data of girls aged 11–17 years ( $n=2205$ ) from this module. Although this study used de-identified publicly available data, we required approval from the University of Texas Medical Branch institutional review board.

### 2.2. Data collection

This study focused on survey questions pertaining to HPV vaccination of adolescent girls aged 11–17 years. Parents’ awareness about HPV vaccine was assessed from the question, “Two vaccines/shots to prevent HPV infection are available in the US. Both vaccines prevent cervical cancer and one also prevents genital warts. The two HPV vaccines are sometimes called CERVARIX or GARDASIL. Before this survey, have you ever heard of HPV vaccines or shots?” The responses were “yes” or “no”. The receipt of the vaccine and number of vaccine doses were assessed from the parental responses to following two questions, “Did your child ever receive an HPV shot?” and “How many HPV shots did your child receive?” We measured receipt of  $\geq 1$  dose and  $\geq 3$  doses of vaccine from the number of shots received. Parents reported receipt of unknown number of vaccine doses for 28 girls and more than 3 doses for 10 girls (4 doses for 9, and 6 doses for 1) were included in the  $\geq 1$  dose and  $\geq 3$  doses categories, respectively. The denominator for receipt of  $\geq 1$  dose and  $\geq 3$  doses analyses included all girls, while the denominator for 3-dose vaccine series completion analysis included only those who had initiated the vaccine.

Whether parents of the unvaccinated girls would be interested in future vaccination of their daughters was assessed from the question, “If your child’s doctor recommended the HPV vaccine, would you have her get it?” The responses were “yes”, “no”, and “don’t know”. Among parents who responded “no” or “don’t know”, the main reason for not vaccinating their daughters were evaluated. The responses for the main reason included “does not need

vaccine”, “worried about vaccine safety”, “do not know enough about vaccine”, “not sexually active”, “too young for vaccine”, “doctor did not recommend it”, “too expensive”, “don’t know about the place to get vaccine”, “spouse/family member against it”, “already has HPV”, others, and “do not know”. All the responses were mutually exclusive. Among parents who responded “yes” to the above question (who were interested in vaccination) were asked whether or not they would pay all vaccination costs ranging from \$360 to \$500 for 3 doses of the vaccine, administrative cost, and the clinic visit. Responses included “yes” or “no”. Furthermore, those who responded “no” to this question (who were interested in vaccination but would not pay \$360 to \$500 for vaccination) or those who cited expense as the main reason for not vaccinating were further asked whether or not they would vaccinate their daughters if the vaccines cost much less or free. Responses included “yes” or “no”.

Demographic, socioeconomic, and preventive health behaviors covariates were also examined. Girls were categorized by their race and ethnicity (non-Hispanic white, non-Hispanic black, non-Hispanic Asian and Hispanic, and others), region (northeast, midwest, south, and west), highest education completed by a parent (<high school, high school graduate/general equivalency diploma, some college/college degree), family income according to percentage of the federal poverty line (<100%, 100–<200%,  $\geq 200\%$ ), and type of health insurance coverage (uninsured, public, and private). Preventive health behaviors such as a well-child check-up, dental examination, or influenza vaccine in the past 12 months were assessed by “yes or no” responses.

### 2.3. Statistical analysis

All analyses were conducted using STATA 10 svy commands (STATA Corporation, College Station, TX) by taking into account survey weighting for the NHIS complex survey design, which consisted of multistage, stratified, and clustered samples. Probability sampling weights were used in conjunction with strata and primary sampling units (psu) to generalize the results to the population of 11–17 year old girls. Percentages and 95% confidence interval for HPV vaccine uptake of  $\geq 1$  dose and  $\geq 3$  doses were estimated by the age groups (11–12 years and 13–17 years), socio-demographic characteristics, preventive health behaviors, and the parental awareness about HPV vaccine. Estimation of vaccine series completion among those who initiated the vaccine was also stratified similarly. All estimates were weighted to girls aged 11–17 years.

Bivariate comparisons were assessed using chi square tests. We used multivariate logistic regression analyses to examine the association of race/ethnicity, the highest education level of a parent, family income (% of federal poverty line), insurance coverage, preventive health behaviors and parental awareness about HPV vaccine with HPV vaccine receipt of  $\geq 1$  dose and  $\geq 3$  doses, and 3-dose vaccine series completion among girls who initiated the vaccine. Variables were screened for inclusion in the multivariate model. Candidate variables with  $P \leq .20$  with any dependent variable (uptake of  $\geq 1$  dose; uptake of  $\geq 3$  doses; and 3-dose series completion among girls who initiated vaccine) were included in the multivariate model.

## 3. Results

A total of 98.5% (2171/2205) of parents of 11–17 year old girls responded to the questions on HPV vaccination. Therefore, we restricted our analysis to these 2171 girls. Almost 29% and 14.2% of girls received  $\geq 1$  dose and  $\geq 3$  doses of the vaccine, respectively (Fig. 1). About 49% of girls who initiated the vaccine (received  $\geq 1$  dose) completed the 3-dose vaccine series. Girls aged 16–17 years

Download English Version:

<https://daneshyari.com/en/article/2402612>

Download Persian Version:

<https://daneshyari.com/article/2402612>

[Daneshyari.com](https://daneshyari.com)